SC240□ Series Mini Tuning Fork Vibrating Switch Operation Manual

Description

SC240□ tuning fork switch uses two wires power supply with 20～250、50/60 Hz Vac / Vdc. It can be utilized to detect liquid medium in applications with S.G.＞0.07 g/cm^3 and viscosity between 1～10000 cSt. It also has compact size, which is suitable for applications with limited space.
SC240□ offers 3 options of plug connections: DIN 43650、Cable Connect、M12x1 Connector. Furthermore, the fork can be polished(Ra) to meet the requirements for particular industries like pharmaceutical and food processing.
SC240□ is equipped with magnetic test function. It can examine the functioning of the switch after the switch is installed.

Features

◎ Compact size, suitable for limited space.
◎ Wide range of power supply from 20~250 Vac/Vdc.
◎ 3 options of plug connections.
◎ Fork polished to users' standard for industries like pharmaceutical and food processing.
◎ Magnetic test to examine proper functioning of the switch.

1. Specification

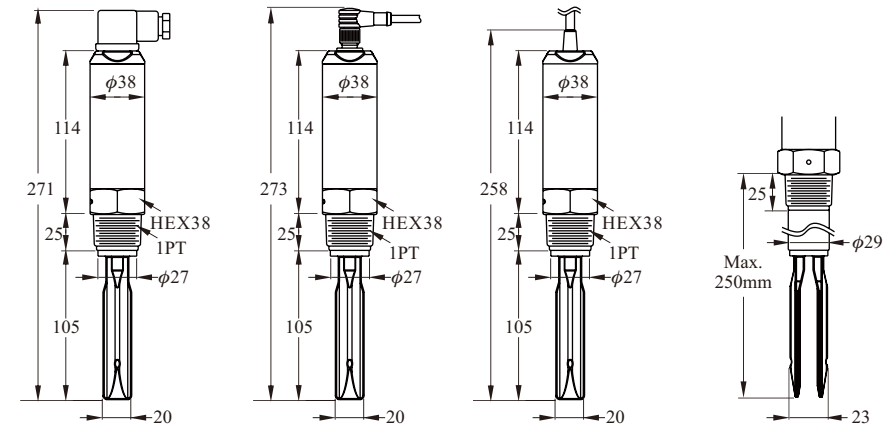
Housing	Housing material	SUS 304
	Protection	IP 65 / IP67
	Plug connection	4-pole plug
		DIN 43650
		Cable Connect
		M12x1 Connector
Process connection	Thread	1" more
	Material	SUS304, SUS316, SUS316L
Tuning fork	Material	SUS304, SUS316, SUS316L
	Length	Min. 100 mm
	Surface quality	Option
Weight	Total weight	Approx. 0.4 kg
Electronics	Power supply	20~250，50/60 Hz Vac / Vdc
	Output	Contactless electronic switch
	Internal current requirement	Approx. 3 mA
	Load current	Min. 10 mA
		Max. 500 mA
	Vibrating frequency	Approx. 350~370Hz
	Switching time	1~3 s when covering
		1~3 s when becoming free
	Switching mode	Min./Max. detecting mode by connection
	Control lamp	Blue LED-Power indicants
		Red LED-Switching status indicants
	Switching point	Vertical orientation:23 ± 5mm from top of fork
		Horizontal orientation:10 ± 1mm from fork centre
	Magnetic testing	Place magnet nearby the testing spot to perform
	Overvoltage category	III
Ambient conditions	Ambient temperature on the housing	-40~+80 °C
	Storage and transport temperature	-40~+85°C
	Product temperature	-40~+100 °C(150°C option)
	Ambient damp	20%~80% RH non-condensed
	Operating pressure	Max. 40 Bar
Product	Viscosity	1~10000 cSt
	Density	Solid:≥0.07g/cm^3 Liquid:≥0.7g/cm^3

Recommended relay's type for different power supply.

Brand	Model	Voltage	Current
Omron	MY2N-J	24Vdc	46
	MY2N-J	24Vdc	10
	MY2N-J	100/110Vac	11
	MKS2P	110Vac	21
	MK2PN-I	220Vac	11
Finder	62.33.8.230.0040	230Vac	10.5
	62.33.8.230.0040	230Vac	14
Panasonic	HP Service	220Vac	9.5
	HG Service	220Vac	14

2. Appearance

Types of SC240□ series as shown below：



Valve plug DIN 43650 (IP65) | M12x1 Connector (IP67) | Cable connector (IP67) | Extension Type

Figure 1 sizes and plug connections

3. Wiring

Power supply is AC/DC sharing. Two wires are connected with relay output(L+/N-). Please see Figure 2.

◎ **Low(Min.) Mode:** number 1 pin(Brown) is connected to N-. No.2 pin(Black) is connected to L+ with Relay. No.4 pin(Yellow Green) goes to ground.
◎ **High(Max.)mode:** No. 1 pin(Brown) is connected to N-. No.3 is connected to No. 2 pin(Black) to L+ with Relay . No.4 pin(Yellow Green) goes to ground.

⚠ Always connect in series with a load!

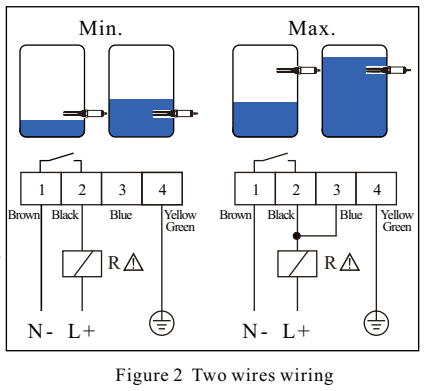
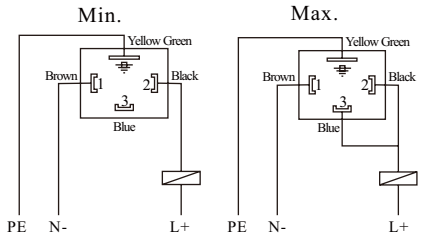
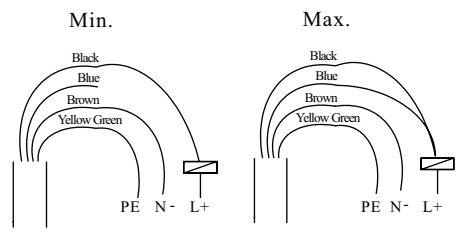


Figure 2 Two wires wiring



DIN Wiring Diagram



M12x1、Cable Wiring Diagram

4. Fork Sensing Spot

SC240□ fork sensing spot is shown as Figure 3 below. Considering testing medium is water(S.G.=1 g/cm^3), sensing spot is at the fillister about 23mm from the tip. If testing medium has S.G. lower than 1g/cm^3, sensing spot would be above the fillister. In contrast, sensing spot will be below the fillister.

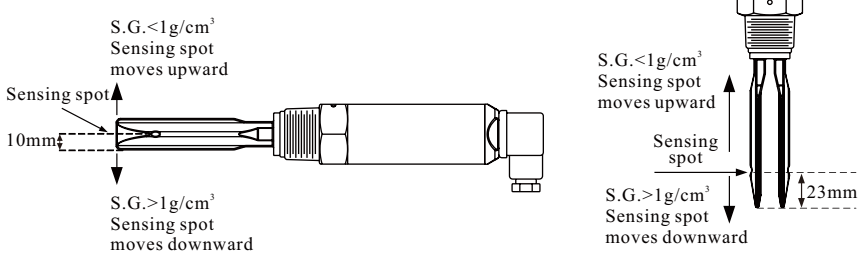


Figure 3 Fork Sensing Spot

5. Output Status

SC240□ is equipped with two wires power supply. Relay output is connected in two wiring power (L+/N-), which offers Min./ Max. modes according to different pin numbers. When powered with 20～250、50/60 Hz Vac / Vdc, top of housing would light up with blue LED.

◎ **Low(Min.) Mode:** Tuning fork switch will be actuated 3 seconds after the power is on. Relay is NO and red LED indication is off. When tuning fork is covered by testing medium, vibration stops and relay becomes NC. Red LED indication is on.
◎ **High(Max.) Mode:** Tuning fork switch will be actuated 3 seconds after the power is on. Relay is NC and red LED indication is on. When tuning fork is covered by testing medium, vibration stops and relay becomes numbeR Red LED indication is on.

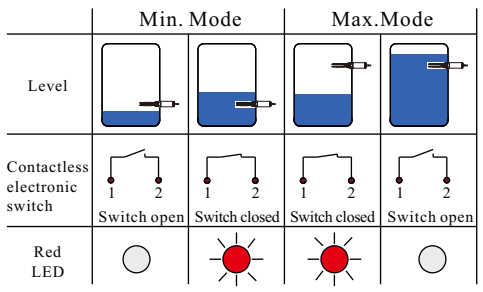


Figure 4 Min./ Max. Mode

6.Magnetic Test

After the switch is installed and powered, magnetic switch can be performed accordingly. Output status will switch from NO. to NC. or NC to NO. and red LED would switch on or off while fork continues to vibrate. When magnet is pulled away from the housing, red LED would return as default while fork continues to vibrate. The purpose of testing is to confirm the wiring and functioning are correct.

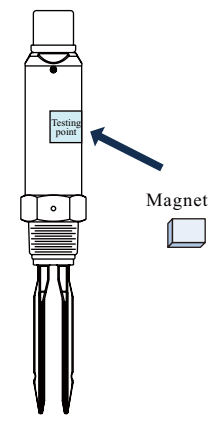
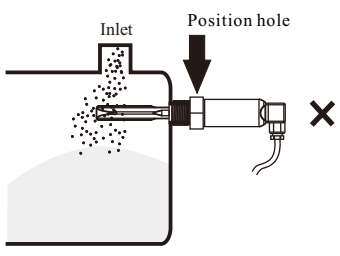


Figure 5 Magnetic Test Diagram

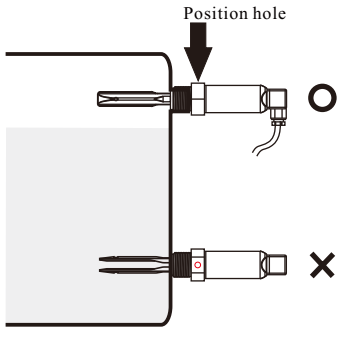
7.Installation

Horizontal Installation:

1. Can be applied in viscosity, powder, and liquid. Do not install near substance inlet.

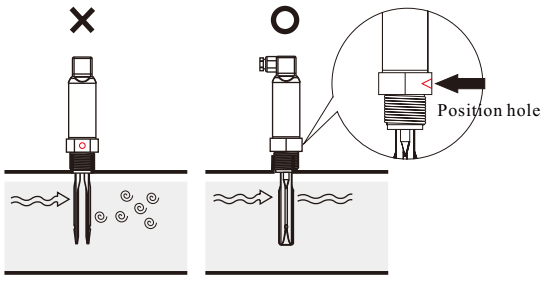


2. When installing the product, The position hole plug must be upward direction.
If not, incorrect installation could be damage the product.

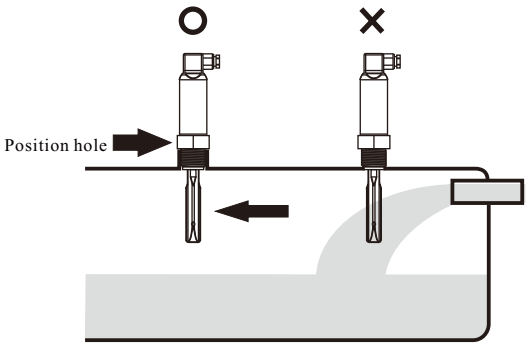


Vertical Installation:

1. Opening of the two fork blades is to be as the flow direction.



2. Do not install near substance inlet.



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